Visual Computing Forum

Aging – cognition, brain imaging and genetics

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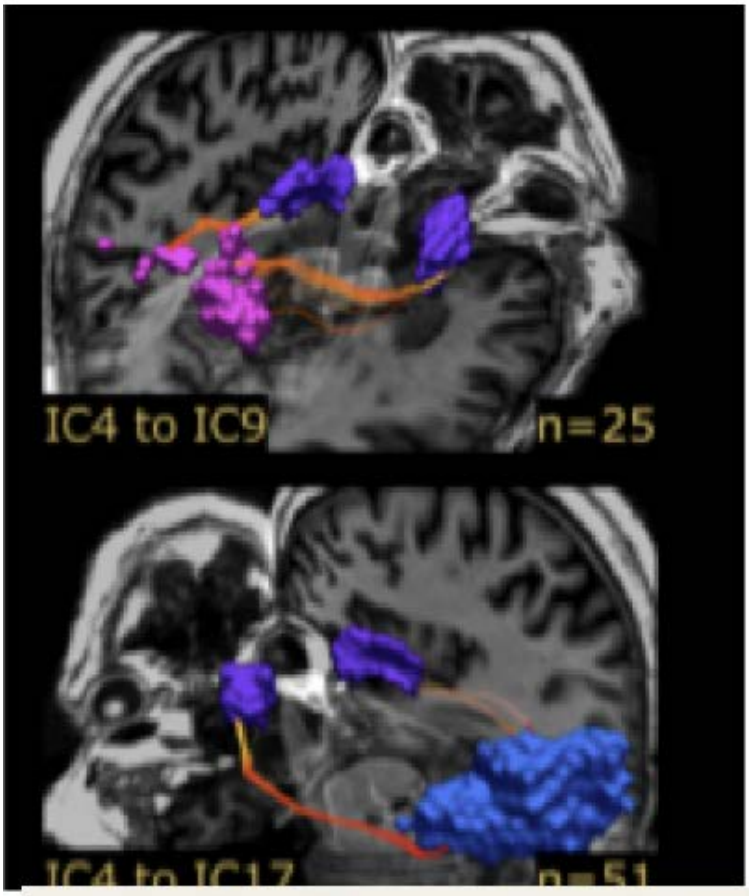
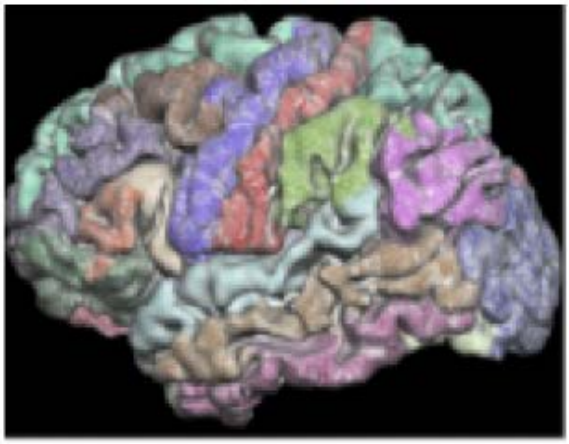
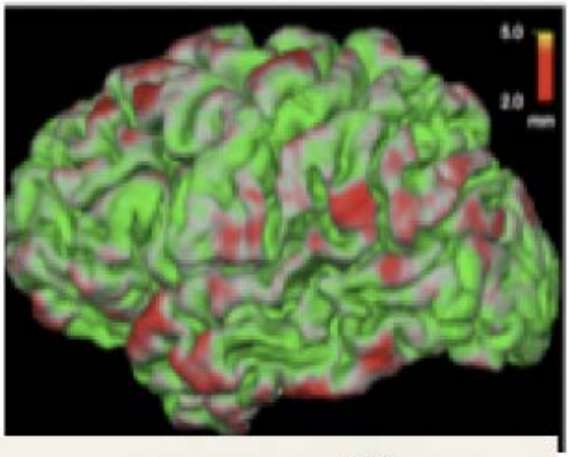
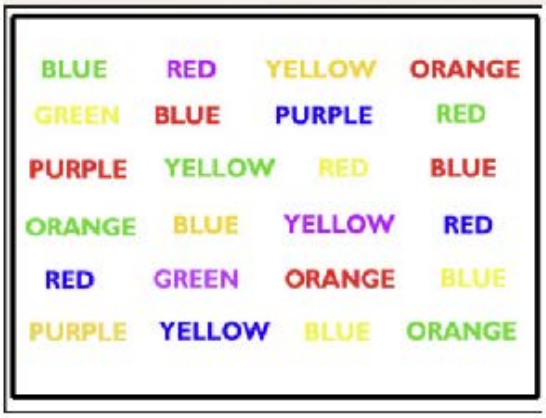
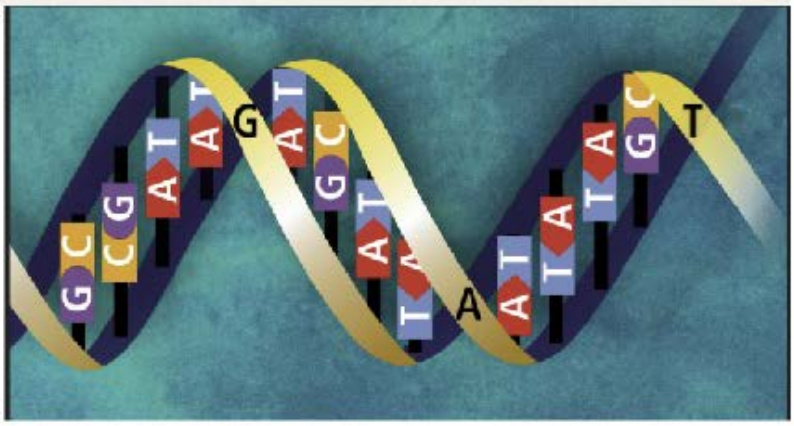
Lille Auditorium, floor 2, HiB (data blokk)

Abstract:

Aging is associated with cognitive decline and associated changes in brain structure and function, modulated by genetics, environment, and stochastic processes (arrow of time). Most research on the aging brain has used cross sectional designs, although longitudinal investigations are necessary to uncover more precisely age-related changes in individuals, and how healthy aging differ from early signs of a neurodegenerative disease. Such longitudinal studies have demonstrated large individual differences in subjects between 50 and 80 years of age. Some older individuals preserve both cognitive performance and brain structure and function into high age, others demonstrate early cognitive decline and gross changes in imaging-derived measures, and there is presently an immense interest to identify contributing lifestyle and genetic factors in the aging process. This has also motivated the current study on cognitive aging, brain imaging and genetics, which started in 2003 as a collaboration between researchers at the University of Oslo and the University of Bergen. The subjects in the Bergen cohort have been invited to participate in a baseline and two follow-up studies, and more than 100 individuals from the Bergen area have given their informed consent to take part in a comprehensive neuropsychological examination and structural and functional brain imaging sessions at three separate occasions about three years apart. They have also delivered blood samples for DNA analysis.

In this seminar Astri J. Lundervold will present the study design, the cohort sample, and characteristics of the cognitive data being collected in the study. Arvid Lundervold will present the MR imaging part including the multimodal recordings, image processing and data analysis. Analysis of such heterogeneous cohort data is challenging, both technically and with respect to mutual understanding across the disciplines that are involved in the project. Both presenters will give short examples from the previous and ongoing research and look forward to interesting discussions and input from the audience.

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